

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



543 014

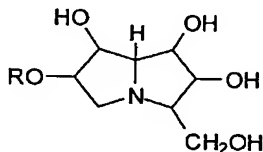
(43) International Publication Date
5 August 2004 (05.08.2004)

PCT

(10) International Publication Number
WO 2004/064715 A2

- (51) International Patent Classification⁷: **A61K**
- (21) International Application Number:
PCT/GB2004/000198
- (22) International Filing Date: 21 January 2004 (21.01.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
0301554.2 23 January 2003 (23.01.2003) GB
- (71) Applicant (for all designated States except US): **MOLECULARNATURE LIMITED** [GB/GB]; 12 Craufurd Rise, Maidenhead, Berkshire SL6 7LS (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **WATSON, Alison, Ann** [GB/GB]; Trefriw-Fach, Tyn-y-Graig, Ystrad-Meurig, Ceredigion SY25 6AF (GB). **NASH, Robert, James** [GB/GB]; Trefriw-Fach, Tyn-y-Graig, Ystrad-Meurig, Ceredigion SY25 6AF (GB). **EVINSON, Emma, Louisa** [GB/GB]; 4 Arborfield Close, Helpston, Peterborough, Cambridgeshire PE6 7DL (GB).
- (74) Agent: **PRICE, Vincent, Andrew**; Price & Co., 3 Sickleholme Court, Bradley, Huddersfield, West Yorkshire HD2 1NB (GB).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:
— without international search report and to be republished upon receipt of that report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: IMMUNOMODULATORY COMPOSITIONS



(I)

(57) Abstract: Isolated immunomodulatory (e.g. immunostimulatory) polyhydroxylated pyrrolizidine compounds having the formula (I), wherein R is selected from the group comprising hydrogen, straight or branched, unsubstituted or substituted, saturated or unsaturated acyl, alkyl (e.g. cycloalkyl), alkenyl, alkynyl and aryl groups, or a pharmaceutically acceptable salt or derivative thereof, are useful in therapy and prophylaxis, including increasing the Th1:Th2 response ratio, haemorestitution, alleviation of immunosuppression, cytokine stimulation, treatment of proliferative disorders (e.g. cancer), vaccination, stimulation of the innate immune response and boosting of the activity of endogenous NK cells.

WO 2004/064715 A2